

## Attachment A

### Ground Water Protection Regulations and Guidance

Selected relevant guidance is as follows:

- Code of Federal Regulations 43 CFR §3160 - *Onshore Oil and Gas Operations*
  - 3161 - Jurisdiction and Responsibility (Includes Inspections); 3162 - Requirements for Operating Rights Owners and Operators; 3163 - Noncompliance, Assessments, and Penalties; 3164 - Special Provisions (Onshore Oil and Gas Orders); 3165 - Relief, Conflict, and Appeals
  - 3162.4-2 Samples, Tests and Surveys. During the completion of a well, the operator shall, when required by the authorized officer (AO), conduct, test, run logs and make other surveys reasonably necessary to determine the presence, quantity, and quality of oil, gas, other minerals, or the presence or quality of water. These tests and logs will be reviewed and correlated with geologic and hydrologic data.
  - 3162.4-2(b) When needed or as determined by the AO, the operator shall conduct reasonable tests which will demonstrate the mechanical integrity of the down hole equipment.
  - 3162.5-2(d) Protection of Fresh Water and Other Minerals. Test and surveys of the effectiveness of such measures (to isolate and protect usable water) shall be conducted by the operator using such procedures and practices approved or prescribed by the AO.
- Onshore Oil & Gas Order No. 1
  - *Sec. II, Definitions* – Complete Application for Permit to Drill (APD) package must contain: Form 3160-3 Application for Permit to Drill or Re-enter; Well Plat certified by a registered surveyor; Drilling Plan; Surface Use Plan; Evidence of Bonding; Operator Certification; and Onsite Inspection (43 CFR §3162.3-1(d)).
  - *Sec. III, D., 3. Drilling Plan* - The Application for Permit to Drill (APD) drilling plan will include estimated depths and thickness of formations, members, or zones potentially containing usable water, oil, gas...that the operator expects to encounter, and the operator's plans for protection of such resources. (43 CFR §3162.3-1(d)(1))
  - *Sec. III, D., 4. Surface Use Plan of Operation* - The Surface Use Plan requires the operator to provide for safe operations, adequate protection of surface resources, groundwater, and other environmental components. Operator must describe plans for construction and lining, if necessary, of reserve pits. (43 CFR §3162.3-1(d)(2))
  - *Sec. III, D., 4., F. Approval of APDs, 3.* - The approved APD will incorporate Conditions of Approval (COAs) that reflect necessary mitigation measures, identified through the APD review and appropriate NEPA and related analyses for resource protection. (43 CFR §3162.3-1(i))
- Onshore Oil & Gas Order No. 2
  - *Sec. III, B. Casing and Cementing Requirements* - The proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all

usable water zones. All isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation...and shall be based on all relevant factors, including: presence/absence of hydrocarbons; fracture gradients; usable water zones; formation pressures; lost circulations zones; other minerals; or unusual characteristics. All indications of usable water shall be reported. (54 FR 39528, Sept, 1989)

- *Sec. III, B., 1. Minimum Standards and Enforcement Provisions for Casing and Cementing* - The surface casing shall be cemented back to the surface either during the primary cement job or by remedial cementing. (57 FR 3025, Jan. 27, 1992)
- *Sec. III, G. Drilling Abandonment Requirements* - All formations bearing usable-quality water, oil, gas, or geothermal resources, and/or a prospectively valuable deposit of minerals shall be protected. (43 CFR §3162.3-4)
- *Sec. III, G., 6. Isolating Medium* – Any cement plug which is the only isolating medium for a usable water interval...shall be tested by tagging with the drill string. Any plugs placed where the fluid level will not remain static also shall be tested...

➤ Onshore Oil & Gas Order No. 7

- *Sec. I, B. Purpose* - The purpose of this Order is to specify informational and procedural requirements for submission of an application for the disposal of produced water, and the design, construction and maintenance requirements for pits.
- *Sec. III, A. General Requirements* – Unless prohibited by the authorized officer, produced water from newly completed wells may be temporarily disposed of into pits for a period of up to 90 days, if the pit was approved as part of the APD.
- *Sec. III, D. Information requirements for pits, 1. Lined Pits* – The authorized officer shall not consider for approval an application for disposal into line pits on Federal/Indian leases unless the operator also provides the following information:  
*c.* Criteria used to determine the pit size, which includes a minimum of 2 feet of freeboard; and *f.* The type, thickness, and life span of material to be used for lining the pit and the method of installation.
- *Sec. III, D. Information requirements for pits, 2. Unlined Pits* – Application for disposal into unlined pits may be considered by the authorized officer (AO) where the application of the operator shows that such disposal meets one or more of the following: iii. (A) The water to be disposed of will not degrade the quality of surface or subsurface waters in the area. (It should be noted that water quality may degrade significantly if percolating through soils with high soluble salt content); and iv. That the volume of water to be disposed of per disposal facility does not exceed 5 barrels per day on a monthly basis.

➤ The Gold Book

- *Chapter 4- Construction and Maintenance* - Reserve Pits. Avoid constructing reserve pits in areas of shallow ground water. To prevent contamination of ground water and soils, it is recommended that operators use a semi-closed-loop drilling system or line the pit with an impermeable liner, particularly when the pits are located in areas of shallow ground water or porous soils over fractured bedrock aquifers. Pits can be lined with synthetic liners or other materials such as bentonite or clay and should have a permeability of  $10^{-7}$  cm/sec. Synthetic

liners with a minimum thickness of 12 mils and resistance to ultraviolet radiation, weathering, chemicals, punctures, and tearing are most commonly used.

- *Chapter 5- Disposal of Produced Water* - The disposal structure must conform to approved construction requirements in accordance with Onshore Order No. 7, BLM Manual 9172, and applicable State agency requirements. After construction, the facility must be deemed acceptable by the AO prior to discharge of fluids.
- *Chapter 5- Pollution Control/Hazardous Waste* - Operators are encouraged to substitute less toxic (chromate, lead, etc.), yet equally effective products, for conventional drilling products such as mud and pipe dope. Containment structures sufficiently impervious to prevent a discharge to waters of the U.S. are to be constructed around all bulk oil storage facilities, including tank batteries, consistent with EPA's SPCC regulations.

➤ BLM Reference Material

- Reference guide for 43 CFR §3160 is located at:  
[http://www.blm.gov/nv/st/en/prog/minerals/leasable\\_minerals/oil\\_gas/oil\\_and\\_gas\\_operations/subpart\\_3160.html](http://www.blm.gov/nv/st/en/prog/minerals/leasable_minerals/oil_gas/oil_and_gas_operations/subpart_3160.html)
- Onshore Order reference is located at:  
[http://www.blm.gov/mt/st/en/prog/energy/oil\\_and\\_gas/operations/orders.html](http://www.blm.gov/mt/st/en/prog/energy/oil_and_gas/operations/orders.html)
- The Gold Book is located at:  
[http://www.blm.gov/ut/st/en/fo/vernal/energy\\_the\\_gold\\_book.html](http://www.blm.gov/ut/st/en/fo/vernal/energy_the_gold_book.html)